

Application No. 10/057,640
Amendment dated May 26, 2004
Reply to Office Action of November 26, 2003

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

8. (Canceled)
9. (Canceled)
10. (Canceled)
11. (Canceled)
12. (Canceled)
13. (Canceled)
14. (Canceled)
15. (Canceled)
16. (Canceled)
17. (Canceled)
18. (Canceled)
19. (Canceled)
20. (Canceled)

41. (Canceled)

42. (Canceled)

43. (Canceled)

44. (Canceled)

45. (Canceled)

46. (Canceled)

47. (New) An apparatus for machining holes in crankshafts at various circumferential positions about a longitudinal axis of each crankshaft and at various angles to the longitudinal axis of each crankshaft, the apparatus comprising:

a fixture for carrying at least first and second crankshafts;

a pair of tools for simultaneously forming holes in the crankshafts by relative movement between the tools and the crankshafts along a plunging axis;

a first motor drive associated with the fixture for shifting the crankshafts relative to the plunging axis to allow the tools to form holes in the crankshafts extending obliquely to the longitudinal axes thereof;

first and second sets of crankshaft end mounts carried on the fixture for rotatively supporting end portions of the corresponding first and second crankshafts; and

a second motor drive associated with the first and second sets of crankshaft end mounts operable to simultaneously rotate each of the crankshafts while supported at either end portion thereof for synchronous rotational positioning of the crankshafts about the respective longitudinal axes to allow the tools to form holes at the various circumferential positions of the crankshafts about the axes thereof.

48. (New) The apparatus of claim 47 wherein the end mounts comprise a headstock and a tailstock of each set, and

a third motor drive for shifting the headstocks and tailstocks relative to each other to allow for removal and loading of crankshafts on the fixture.

49. (New) The apparatus of claim 48 wherein the tailstocks are mounted to a slide carrier and the third motor drive is operable to slide the tailstocks via the slide carrier toward and away from the respective headstocks.

50. (New) The apparatus of claim 47 wherein the end mounts comprise a headstock and a tailstock of each set, and the second motor drive comprises a single motor and drive transmission between the motor and the headstocks so that operation of the motor simultaneously rotates both the crankshafts through the headstocks rotatively supporting the crankshafts.

51. (New) The apparatus of claim 47 wherein the fixture is a pivotal fixture, and the first motor drive is operable to pivot the fixture and crankshafts carried thereon.

52. (New) The apparatus of claim 47 in combination with the first and second crankshafts.